

IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A method of providing biological analyses to a remote client; said method comprising:
 - providing a plurality of discrete sample nodes configured to receive a discrete sample and removably attached at corresponding attachment points in a predetermined spatial relationship with one another on a sample structure;
 - transferring a sample to each of said plurality of discrete sample nodes independently of sample transfers to the other discrete sample nodes wherein the corresponding attachment point of said each discrete sample node is maintained free of sample material;
 - maintaining said plurality of sample nodes in a sample archive comprising a plurality of discrete sample nodes each of said plurality of sample nodes operative to carry a discrete sample;
 - receiving a request for a biological analysis from a remote client; said request comprising identification of a selected desired one of said plurality of discrete sample nodes and identification of a selected assay;
 - responsive to said receiving, retrieving said selected desired sample node from said archive and preparing said selected assay; and
 - performing said selected assay for said desired sample node, selected sample node, wherein each of said plurality of discrete sample nodes is removably attached at an attachment point on a corresponding one of a plurality of sample structures and wherein said plurality of sample structures are maintained in a predetermined spatial relationship with one another.
2. (Original) The method of claim 1 further comprising transmitting results of said performing and data representative of said performing to said remote client.
3. (Currently amended) The method of claim 1 further comprising shipping said selected desired sample node to said remote client.
4. (Original) The method of claim 1 wherein said request is received via a network connection.
5. (Original) The method of claim 1 wherein said assay is a genomics experiment.
6. (Original) The method of claim 1 wherein said assay is a proteomics experiment.

7. (Currently amended) The method of claim 1 wherein said retrieving said selected desired sample node comprises interrogating a database.
8. (Currently amended) The method of claim 1 wherein said retrieving said selected desired sample node comprises utilizing an optical sensor.
9. (Currently amended) The method of claim 1 wherein said retrieving said selected desired sample node comprises automatically operating a sample node removal device.
10. (Original) The method of claim 9 wherein said sample node removal device comprises a laser.
11. (Original) The method of claim 9 wherein said sample node removal device comprises a mechanical clipping tool.
12. (Original) The method of claim 1 further comprising washing said sample prior to said performing.
13. (Original) The method of claim 2 wherein said transmitting results comprises encrypting said results and said data.
14. (Currently amended) A method of providing samples to a remote client; said method comprising:

maintaining a sample archive comprising a plurality of sample structures maintained in a predetermined spatial relationship within one or more sample carriers and a plurality of discrete sample nodes, each of said plurality of discrete sample nodes operative to carry a discrete sample and removably attached to one of said plurality of sample structures at a corresponding attachment point;

for each of said plurality of discrete sample nodes,

selecting a sample for storage at said each discrete sample node, and

discretely transferring said selected sample to said each discrete sample node;

receiving a request for a desired sample from a remote client;

responsive to said receiving, identifying a selected one of said plurality of discrete sample nodes in said archive; said selected one of said plurality of discrete sample nodes node in said archive carrying said desired sample;

retrieving said selected one of said plurality of sample nodes identified discrete sample node from said archive, wherein said retrieving includes releasing said identified discrete sample node from said corresponding attachment point; and

shipping said ~~selected one of said plurality of sample nodes~~ identified discrete sample node to said remote client.

15. (Currently amended) The method of claim 14 further comprising performing an analysis of said desired sample prior to said shipping.

16. (Original) The method of claim 15 further comprising transmitting results of said performing and data representative of said performing to said remote client.

17. (Currently amended) The method of claim 14 wherein said shipping comprises packaging said ~~selected one of said plurality of sample nodes~~ identified discrete sample node in a sample container.

18. (Currently amended) The method of claim 14 further comprising washing said ~~selected one of said plurality of sample nodes~~ identified discrete sample node prior to said shipping.

19. (Original) The method of claim 14 wherein said request is received via a network connection.

20. (Original) The method of claim 14 wherein said identifying comprises interrogating a database.

21. (Currently amended) The method of claim 14 wherein said retrieving releasing comprises utilizing an optical sensor.

22. (Currently amended) The method of claim 14 wherein said retrieving releasing comprises automatically operating a sample node removal device.

23. (Original) The method of claim 22 wherein said sample node removal device comprises a laser.

24. (Currently amended) The method of claim 22 wherein said sample node removal device comprises a mechanical clipping tool for mechanically disrupting said corresponding attachment point.

25. (Original) The method of claim 15 wherein said analysis is a genomics experiment.

26. (Original) The method of claim 15 wherein said analysis is a proteomics experiment.

27. (Currently amended) A system comprising:
a sample archive comprising a plurality of sample carriers; each of said plurality of sample carriers configured to support a plurality of discrete sample nodes each of said

plurality of sample nodes removably attached to a corresponding one of said plurality of sample carriers at an attachment point and operative to carry a discrete sample;

means for discretely transferring a sample to a desired one of said plurality of discrete sample nodes;

a database containing data records associated with ones of said plurality of discrete sample nodes and data records associated with biological analyses;

means for receiving a request from a remote client; said request containing information related to performing a selected analysis with selected ones of said plurality of discrete sample nodes;

a processor responsive to said means for receiving and operative to retrieve selected ones of said data records from said database;

a sample retrieval apparatus responsive to said processor and operative to retrieve said selected ones of said plurality of discrete sample nodes;

an assay preparation apparatus responsive to said processor and operative to prepare an assay in accordance with said selected analysis; and

means for conducting said selected analysis with said selected ones of said plurality of discrete sample nodes and for providing results of said selected analysis to said ~~processor~~ processor;

wherein said attachment point whereby the configuration of said plurality of sample carriers operates to prevent contamination during removal of selected ones of said plurality of discrete sample nodes.

28. (Original) The system of claim 27 further comprising means for packaging said selected ones of said plurality of discrete sample nodes for shipping to said remote client.
29. (Original) The system of claim 27 wherein said sample retrieval apparatus comprises a sample carrier locator operative to detect a location of selected ones of said one or more sample carriers.
30. (Original) The system of claim 29 wherein said sample carrier locator comprises an optical sensor.
31. (Original) The system of claim 27 wherein said sample retrieval apparatus comprises a sample node removal device operative to remove said selected ones of said plurality of discrete sample nodes from said plurality of sample carriers.

32. (Original) The system of claim 31 wherein said sample retrieval apparatus further comprises an optical sensor.
33. (Original) The system of claim 32 wherein said sample node removal device is responsive to signals transmitted from said optical sensor.
34. (Original) The system of claim 31 wherein said sample node removal device comprises a laser.
35. (Original) The system of claim 33 wherein said sample node removal device comprises a laser and a mechanical positioning system operative to position said laser relative to said selected ones of said plurality of discrete sample nodes responsive to said signals.
36. (Original) The system of claim 31 wherein said sample node removal device comprises a mechanical clipping tool.
37. (Original) The system of claim 33 wherein said sample node removal device comprises a mechanical clipping tool and a mechanical positioning system operative to position said mechanical clipping tool relative to said selected ones of said plurality of discrete sample nodes responsive to said signals.
38. (Original) The system of claim 31 wherein said sample node removal device comprises a respective transceiver incorporated in each of said plurality of discrete sample nodes.
39. (Original) The system of claim 27 wherein said selected analysis is a genomics experiment.
40. (Original) The system of claim 27 wherein said selected analysis is a proteomics experiment.
41. (Currently amended) A computerized method comprising:
receiving a request from a remote client for performing a selected analysis of a selected sample node maintained on a sample carrier in a sample archive wherein said sample carrier includes a plurality of sample ~~structures~~ structures, each sample structure having one or more attachment points, and a plurality of sample nodes, each of said plurality of sample nodes being removably attached to said sample carrier at a corresponding one of said attachment points and ~~operative to carry a discrete sample~~ each of said plurality of sample nodes carrying a discrete sample, said discrete sample having been individually applied to said each sample node;

retrieving data records associated with said selected sample node and said selected analysis from a database;
retrieving said selected sample node from said sample carrier;
preparing an assay in accordance with said selected analysis; and
conducting said selected analysis of a specimen carried on said selected sample node wherein said plurality of sample structures ~~are~~ is maintained in a predetermined spatial relationship with one another providing separation of said plurality of sample nodes.

42. (Previously Presented) The computerized method of claim 41, and further comprising providing results of said selected analysis and data related to said selected analysis to said remote client.

43. (Previously Presented) The computerized method of claim 41, and further comprising transmitting control signals to a sample carrier retrieval device operative to retrieve said sample carrier from a sample carrier receptacle at an archive facility.

44. (Previously Presented) The computerized method of claim 41, and further comprising transmitting control signals to a sample carrier storage device operative to place said sample carrier in said sample carrier receptacle.

45. (Previously Presented) The computerized method of claim 41, and further comprising transmitting control signals to a sample node removal device operative to locate and to remove said selected sample node from said sample carrier.

46. (Currently amended) A system comprising:

a sample archive including a plurality of sample structures maintained in a predetermined spatial relationship within a sample carrier, each sample structure having an attachment point for removably attaching a corresponding discrete sample node;

means for selectively and discretely transferring a sample to each of said discrete sample nodes;

a database containing data records associated with samples stored in said archive, wherein each sample is discretely carried in a respective removably attached discrete sample node in said archive;

means for receiving a request from a remote client; said request containing information related to selected ones of said samples;

a processor responsive to said means for receiving and operative to retrieve selected ones of said data records from said database;

a sample retrieval apparatus responsive to said processor and operative to retrieve said selected ones of said samples;

a sample preparation apparatus responsive to said processor and operative to prepare said selected ones of said samples for analysis; and

means for packaging said selected ones of said samples for shipping to said remote client; wherein said sample retrieval apparatus, said sample preparation apparatus, and said means for packaging are operative at a rate sufficient to retrieve, to prepare, and to package in excess of 100 samples per day.

47. (Original) The system of claim 46 further comprising means for conducting a selected analysis with said selected ones of said samples and for providing results of said selected analysis to said processor.

48. (Original) The system of claim 46 wherein said sample retrieval apparatus comprises an optical sensor.

49. (Original) The system of claim 46 wherein said sample retrieval apparatus comprises a laser.

50. (Original) The system of claim 47 wherein said selected analysis is a genomics experiment.

51. (Original) The system of claim 47 wherein said selected analysis is a proteomics experiment.

52. (Original) The system of claim 46 wherein said sample retrieval apparatus, said sample preparation apparatus, and said means for packaging are operative at a rate sufficient to retrieve, to prepare, and to package in excess of 200 samples per day.

53. (Original) The system of claim 46 wherein said sample retrieval apparatus, said sample preparation apparatus, and said means for packaging are operative at a rate sufficient to retrieve, to prepare, and to package in excess of 500 samples per day.

54. (Currently amended) The method of claim 1 wherein said plurality of sample structures are discrete sample nodes is maintained in said predetermined spatial relationship by radial elements of one or more sample structures.

55. (Previously Presented) The method of claim 14 wherein said plurality of sample structures are maintained in said predetermined spatial relationship by radial elements.

56. (Currently amended) The system of claim 27 wherein said each sample carrier comprises structural elements configured to maintain said plurality of discrete sample nodes in a predetermined spatial relationship with one another.
57. (Previously Presented) The method of claim 56 wherein said structural elements are disposed radially.
58. (Previously Presented) The computerized method of claim 41 wherein said computerized method is encoded on a computer readable medium as data and computer executable instructions.
59. (Currently amended) The computerized method of claim 41 wherein said plurality of sample structures ~~are~~ is maintained in said predetermined spatial relationship by radial elements.
60. (Currently amended) The system of claim 46 wherein said plurality of sample structures ~~are~~ is maintained in said predetermined spatial relationship by radial elements.
61. (New) The method of claim 1 wherein each of said plurality of discrete sample nodes comprises a sample support medium and its corresponding attachment point is devoid of said sample support material.
62. (New) The method of claim 61 wherein certain of said plurality of discrete sample nodes comprise a sphere having said sample support medium coated thereupon.
63. (New) The method of claim 61 wherein certain of said plurality of discrete sample nodes are at least partially spherical and have said sample support medium coated thereupon.
64. (New) The method of claim 24 wherein said mechanically disrupting includes at least one of one of breaking, clipping and dislodging said corresponding attachment point.